6/PRTS

10/500269
DT04 Rec'd PCT/PTO 24 JUN 2004
EV302220872US

USER INTERFACE AND METHOD OF VIEWING UNIFIED COMMUNICATIONS EVENTS ON A MOBILE DEVICE

[0001] This application claims the benefit of priority from U.S. Provisional Application No. 60/342,130 filed on December 26, 2001, and is hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] This invention relates generally to a user interface for messaging. More particularly, the invention relates to user interfaces for displaying a communications event in context with select stored communications events.

BACKGROUND OF THE INVENTION

[0003] Most cellular networks such as Code Division Multiple Access (CDMA) and Global Service Mobile (GSM) networks support data services in addition to standard telephony based services. Short Messaging Service (SMS) and Wireless Application Protocol (WAP) are data centric services available on many cellular networks. Data networks, such as MobiTex™, Datatac™, as well as advanced networks such as General Packet Radio Service (GPRS), Universal Mobile Telecommunications System (UMTS), Enhanced Data for GSM Enhancement (EDGE) and 1X that overlay cellular networks, allow an appropriately configured mobile device to offer data services such as e-mail, web browsing, as well as SMS and Multimedia messaging service (MMS) messaging, and WAP data sessions.

[0004] Communications events include telephone calls, both sent and received, SMS messages both sent and received, e-mail correspondences both sent and received, and wireless application protocol sessions, among other data based transactions. Each communications event has at least two parties, the user of the mobile device and at least one correspondent. Each correspondent can have multiple contact addresses, such a work phone number, a home phone number, a mobile phone number, an SMS address, and a plurality of email addresses.

[0005] Mobile devices were originally intended to provide telephony services, and have, with the addition of data centric features, become complex to operate. The user interfaces currently available for viewing the history of communications events on a mobile device, typically only enable a user to view a history of one type of communications events, or a subset thereof, and from that history view the contents of a communications event. This makes sense in a voice only environment, but the addition of data services has exposed this interface paradigm as insufficient.

[0006] Figure 1 illustrates a user interface **10** of the prior art. User interface **10** displays a notification **12** that a new message, such as an e-mail or SMS message has been received. The user of the mobile device is presented with the option to either exit the notification **14**, or read the received message **16**. This user interface does not permit the user to view the context in which the received message should be interpreted.

[0007] Figure 2 illustrates a second user interface of the prior art **18**. User interface **18** illustrates a list of recent telephone calls. Once again the user is presented with the option to exit **14**, and additionally is given the option to place a call **22** to one of the recent callers, or to delete **20** a caller from the list of recent calls. Call lists of this type provide either separate lists of sent and received calls, or provide an integrated list of sent at received calls.

[0008] Presently, when a mobile device receives an incoming communications event, such as an SMS message, the only information provided to the user is that an SMS message has been received. This notification may indicate the originating SMS address. The user can then either view the SMS message, or scroll through a collective in-box of SMS messages to determine the last SMS message received from the same originating address. If the user wishes to view the last SMS message sent to the party originating the incoming SMS message, the user must check the SMS out box on the mobile device. Additionally, if the user would like to check to see when the last call made to the SMS originating address, or received from the originating SMS address occurred on, the user must check either the incoming or outgoing call logs. If email services are integrated in the mobile device, an additional list must be examined. This provides a plurality of different lists that a user must examine to

determine the communications event history concerning a correspondent. If a correspondent has multiple contact addresses, viewing all communications events with the correspondent is further complicated.

[0009] It is, therefore, desirable to provide a method and system for handling communications events in a manner that provides the user of a mobile device with the context of the communications event through a presentation of the communications event history associated with a given correspondent.

SUMMARY OF THE INVENTION

[0010] It is an object of the present invention to obviate or mitigate at least one disadvantage of previous communications event handling systems.

[0011] In a first aspect, the present invention provides a method of handling a communications event in a mobile device having a user interface. The method includes identifying, in a communications event database, a correspondent associated with the communications event, retrieving, from the communications event database, a communications event history associated with the correspondent and controlling the user interface to provide the retrieved communications event history to a user.

[0012] In an embodiment of the first aspect of the present invention, the step of identifying is preceded by the step of determining a communications event type for the communications event, where the communications event type of the communications event is selected from a list including telephony based voice communications events, e-mail communications events, short messaging service communications event and wireless applications protocol communications event. In another embodiment of the present invention, the communications event is an incoming communications event, and the method further includes the step of receiving the incoming communications event prior to identifying the correspondent. In another embodiment of the present invention, the user interface is a display, and the step of controlling the user interface includes displaying the retrieved communications event history on the display. In yet a further embodiment of the present invention, the method includes adding the incoming communications event to the communications event history in the communications event database. In embodiments of the present

invention, receiving an incoming communications event and identifying the correspondent includes one of receiving a telephony based phone call and extracting a phone number from call display information, receiving an incoming email message and extracting an email address from the header of an email message and receiving an incoming short messaging service (SMS) message and extracting an originating address from a SMS message. In a further embodiment of the present invention, identifying the correspondent further includes cross referencing one of the extracted phone number, the extracted email address and the extracted originating address, with entries in an address book accessible to the mobile device. In yet a further embodiment of the present invention the method includes the step of controlling the user interface to provide the user with communications event handling options, where controlling the user interface can include providing the user an option to either ignore or answer an incoming telephony based call, or read or ignore one of the incoming email message and the incoming SMS message. Another embodiment of the present invention includes updating the communications event database to reflect a status of the incoming communications event after providing the user with communications event handling options.

[0013] In a second aspect of the present invention, there is provided a mobile device, having a user interface and a transceiver for transmitting and receiving communications events. The mobile device includes a communications event database, and a communications event handler. The communications event database is for storing a communications event history associated with a correspondent. The communications event handler is in communication with the communications event database for retrieving from the communications event database the communication event history in response to a communications event, and is for controlling the user interface to provide the retrieved communication event history to a user.

[0014] In an embodiment of the second aspect of the present invention, the communications event handler includes a communications event type identifier for identifying the type of the communications event from a list including telephony based voice communications events, e-mail communications events, short messaging service communications event and wireless applications protocol communications

event. In another embodiment of the second aspect of the present invention, the user interface is a display, and the communications event handler includes a display controller for controlling the display to display the retrieved communication event history. In another embodiment of the present invention, communications event handler includes a correspondent identifier for identifying the correspondent of an incoming communications event, and the correspondent identifier is connected to the transceiver for receiving call display information, and includes means for identifying the correspondent of an incoming communications event based on the received call display information, and includes header parsing means for parsing the header of one of a received email message and a received SMS message to extract an originating address, and includes means for identifying the correspondent of an incoming communications event based on the extracted originating address. In a further embodiment, correspondent identifier includes an address book interface for cross referencing the received call display information and the extracted originating address with entries in an address book accessible to the mobile device to identify the correspondent. In yet another embodiment of the second aspect of the present invention, the communications event handler includes a user interface controller for controlling the user interface to provide a user with communications event handling options and also includes means for updating the communications event database to reflect the status of an incoming call.

[0015] In a third aspect of the present invention, there is provided a communications event handler for integration in a communication device having a user interface. The communications event handler includes a database interface and a user interface controller. The database interface is for communicating with a communications event database to retrieve a communications event history associated with a correspondent in response to a communications event. The user interface controller is for receiving the retrieved communications event history from the database interface, and for controlling the user interface to provide the retrieved communication event history to a user.

[0016] Other aspects and features of the present invention will become apparent to those ordinarily skilled in the art upon review of the following description

of specific embodiments of the invention in conjunction with the accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Embodiments of the present invention will now be described, by way of example only, with reference to the attached Figures, wherein:

Figure 1 illustrates a communications event handling system of the prior art;

Figure 2 illustrates a communications event history listing of the prior art;

Figure 3 is a flow chart illustrating a method of the present invention;

Figure 4 is a flow chart illustrating an alternate method of the present invention;

Figure 5 illustrates an exemplary system of the present invention;

Figure 6 illustrates a data flow for a mobile device of the present invention; and

Figure 7 illustrates a data flow for a mobile device of the present invention.

DETAILED DESCRIPTION

[0018] Generally, the present invention provides a method and system for tracking originating, and received, communications events on a mobile device. By tracking received and transmitted communications events, a mobile device can provide a user with the context of the communication with any party.

[0019] In the present invention a mobile device provides an integrated user interface through which a user can view communications events in which a particular correspondent has partaken. A mobile device of the present invention makes use of a communications event database to track all incoming and outgoing communications events with various correspondents.

[0020] The present invention provides a unified view of communications events, so that a user can determine the context of any received communications event, or can determine the context of a communications event to be placed. Thus, upon receipt of a SMS message, or other communications events, after identifying the type of the communications event, in addition to notifying the user that a message has been received, the mobile device will present the user with a listing of the most recent communications events that are associated with the originating address of the message. The user is also given the option of viewing information about the prior communications events, which would include viewing prior SMS messages, viewing information about the data received for a wireless application protocol browsing session, or the call length and dates of any placed or received calls. This information will allow the user to better contextualise the content of the new message. In a presently preferred embodiment, the user is able to set criteria that must be matched by the properties of an incoming communications event in order for the retrieval of the communications event history to begin. This allows the user the ability to only be presented with a communications event history for selected correspondents, and selected types of communications events.

[0021] Figure 3 illustrates an exemplary method of the present invention. In step **100**, the mobile device receives a communications event. Preferably, as a part of receiving the communications event in step **100**, the mobile device identifies the communications event as one of a set of known communications event types including a phone call, an e-mail message and an SMS message, among other known types of communications events. Upon receipt of the communications event, the mobile device identifies the correspondent in the communications event in step **102**. The identification of the correspondent is preferably carried out using call display, a signalling system 7 (SS7) type feature if the communications event is a phone call, through an analysis of an e-mail header if the communications event is an e-mail message or through parsing the header information in a SMS message. Upon identifying the correspondent in step **102**, the mobile device uses the correspondent's identification to retrieve and display a communications event history detailing the communications event the correspondent has been involved with in step **104**. The

communications event history retrieved in step **104** is typically retrieved from a database either in the mobile device, or accessible to the mobile device, that is used to track communications events. Upon retrieval of the communications event history from the database, the mobile device displays the communications event history to the user. Preferably, the displaying of the information to the user allows the user to view prior SMS and e-mail messages to determine the context of a received message. Additionally, the user is preferably able to view a listing of all sent and received calls involving the correspondent along with the time and date at which the call occurred, the length of the call if the call was answered, and an indication if the call was or was not answered. In a presently preferred embodiment of the present method of the invention, the mobile device displays a summary of communications events with the correspondent that both originated from, and were received by the mobile device. It is, however, fully contemplated that in certain embodiments the user is presented with only incoming, or outgoing communications events in the summary. It is preferable that the user be provided with an option to view incoming and outgoing messages on a single display, only incoming messages, or only outgoing communications events.

[0022] One skilled in the art will readily appreciate that when the mobile device of the present invention receives a communications event in step **100** the communications event can be any of a number of event types. Typically, upon receiving a communications event in step **100**, the mobile device analyses the incoming event and determines its specific type. This determination of the communications event type can be performed in numerous ways understood by those skilled in the art. One such method involves determining the communications event type based on the channel over which the communications event was received. For example, if the device supports GSM communications as well as GPRS communications, and the mobile device is capable of supporting voice, SMS, e-mail and WAP type communications events, a communications event received over a GPRS communications channel will be either a WAP or e-mail based communication, whereas a communications event received over the GSM communications channel will be either an SMS or voice type communications event. After narrowing the selection to the two choices based on the communications channel, the mobile device

can parse the header associated with the incoming communications event to determine its specific type. For example, a WAP data session and an email message typically conform to different standard formats, and based on an analysis of the format, a determination can be made. The differentiation between an SMS message and a telephony based voice communications event is known in the art, and can be easily implemented. It is envisioned that on advanced networks all data and voice traffic will be carried on the same channel, much as both voice and data are carried in a Voice-over-IP data network. In such a network, header information associated with datagrams, or other data units, provide identification of the different types of communications event. One skilled in the art will readily appreciate that a number of alternate method can be implemented without departing from the scope of the present invention.

[0023] Figure 4 illustrates a further embodiment of the method of Figure 3. In the method illustrated in Figure 4, steps **100**, **102**, and **104** remain the same. Additionally, in step **106** after a communications event has been received the communications event is added to the database of the mobile device. This step can be performed at any point in the process, and is shown as following the receipt of the communications event as a matter of preference. In step **108**, the mobile device presents a user interface that allows the user to either ignore or answer an incoming telephone call, or alternatively to either read a message or exit the notification in the case of a received SMS, or e-mail message. It is preferable that these options be presented along with the retrieved communications event history, so that the user can make a decision as to what to do with the incoming communications event based on the event history. In step **110**, the database is updated to reflect the communications event status.

[0024] As described above, the user interface preferably indicates to the user whether or not a SMS or e-mail message has been read, or replied to, and whether or not a call was answered. These factors are collectively described as the status of a message. In step **110**, the database is updated to reflect whether or not the user chose to ignore or answer a call in step **108**, or whether the user chose to read the message or exit the notification in step **108**. In a presently preferred embodiment, the

identification of the correspondent in step **102** is preformed by cross-referencing the information obtained through either call display, the analysis of the e-mail header, or the analysis of the SMS message to determine the originating address from which the communications event was placed, with information contained in an address book accessible to the mobile device. It is common for numerous correspondents to have a variety of contact addresses, including telephone numbers corresponding to cellular phones, home phones, and office phones, as well as a plurality of e-mail, and SMS addresses. Through cross-linking of the correspondent identification information obtained in step **102** with the address book of the mobile device, it is possible to provide the user of the mobile device with a communications event history that includes all correspondence, and telephone calls made to, or answered from the identified correspondent.

[0025] Figure 5 illustrates an embodiment of mobile device **112** according to the present invention. Mobile device **112** preferably includes database **116**, transceiver **118**, processor **122**, and display **120**. In alternate embodiments of the present invention, mobile device **112** does not include database **116**, and instead accesses a central server which hosts database **116** through a wireless link. In additional embodiment, mobile device **112** either includes an address book having a plurality of contact addresses for a variety of correspondents, or has access to such an address book using a wireless connection. Communications event software interface module **126** is preferably a software application executed by processor **122**, and is a specific example of a communications event handler according to the present invention. It is contemplated that the communications event handler can be implemented as a separate hardware component, which may or may not implement software based routines. In a further embodiment, the communications event handler can be hardware enabled and integrated with processor **122**.

[0026] Database **116** is preferably structured to have at least one table **128**. In table **128**, four data fields are identified. The first identified data field is status **130**. Status field **130** indicates whether or not an e-mail or SMS message has been read, or whether or not a telephone call was answered. Type field **132** denotes the type of communications event of the record. Type **132** is used to identify whether the

communications event was an e-mail message, a telephone call, or an SMS message. In a presently preferred embodiment, the type field also indicates whether the communications event originated from, or was received by mobile device **112**. The third entry in table **128** is data field **134**. The data field **134** contains information about the communications event of this record. In a presently preferred embodiment, the data field for a SMS or e-mail message would include the body of the message. For a telephone call, in a presently preferred embodiment, data field **134** would indicate the time that the call was placed, and the duration of the call. The final field of Table **128** is index **138**. One skilled in the art will readily appreciate that a number of indexing mechanisms can be employed in either relational, or flat file, database types. The use of index **138** is to be able to easily identify and find a record related to a specific call. One skilled in the art will recognize that a number of entries in this Table will be introduced as the mobile device **112** begins communications events with various correspondents. One skilled in the art will recognize that in conjunction with an address book accessible by mobile device **112**, the index field **138** and status field **130** can be correlated to determine a communications event history for a number of different correspondents. Transceiver **118** is used to both transmit and receive communications events. Upon receipt of a communications event, transceiver **118** begins to pass data to processor **122**. In conjunction with communications event software interface module **126**, processor **122** performs the method illustrated in Figure 3. As a result, processor **122** interacts with display **120** upon receipt of a communications event and after querying database **116**. Thus, processor **122** uses display **120** to provide interface **124**. Interface **124** illustrates a date and time, as well as the number of e-mail, SMS, WAP, and telephone call type communications events between the mobile device and the correspondent. As is illustrated in interface **124**, the status field **130**, the type field **132**, and data field **134** of table **128** are used to provide the user with an indication that unread mail messages exist, sent mail messages, received mail messages and placed calls have been made between the mobile device and the correspondent.

[0027] Transceiver **118** can be replaced by separate transmitters and receivers, and is intended to allow the mobile device to receive communications over a wireless

link. Presently preferred embodiments of the present invention employ transceivers capable of receiving CDMA voice communication as well as 1X data communications, in an alternate embodiment, the transceiver is designed to receive GPRS, and GSM data and voice services, respectively. One skilled in the art will readily appreciate that a transceiver capable of receiving a variety of other combinations of voice and data protocols are contemplated in the present invention.

[0028] Display **120** is preferably a liquid crystal display, and may optionally be a touch sensitive liquid crystal display, so that a user can be provided with user interface acknowledgement buttons on the screen of the device itself. Implementations of graphical interfaces on liquid crystal displays, and touch sensitive liquid crystal displays will be well understood by those skilled in the art of mobile device design. It is fully contemplated that though mobile device **112** has been described herein as having display **120**, that display **120** can be replaced with other user interfaces. Examples of such user interfaces include audio interfaces and dynamic Braille pads for use by individuals with visual impairments.

[0029] Processor **122** is connected to the database **116**, and is capable of performing database queries on database **116** to obtain information from the call event database **116**. Additionally, processor **122** is connected to an address book so that the identified correspondent from step **102** can be cross-referenced to the address book and match to a name in the address book. This will allow mobile device **112** to provide the user with a call event history from the call event database **116** that includes all communications events in which the identified correspondence has partaken, regardless of the communication address used by the correspondent. Upon identifying the correspondent through cross-referencing the address book, processor **122** queries communications event database **116** to obtain a listing of all communications events between the user of the mobile device and the identified correspondent. The results of this query are then formatted and provided to the user on display **120**.

[0030] In a presently preferred embodiment of the system illustrated in Figure 4, the communications event software interface module **126** includes a communications event type identifier. The identifier is for determining the type

associated with the communications event. The identified type is stored in type field **132** in database **116**. In the illustrated embodiment, the identifier is preferably a software routine, and in a more generic implementation is a module in the communications event handler.

[0031] Figure 6 illustrates an exemplary embodiment of a data flow of the present invention. A pre-defined trigger event **140**, such as an incoming SMS message is used as a preset criterion **142**. At least one criterion **144** is set in the preset criteria **142**. The at least one criteria **144** may be communication from a specific party. In this case, preset criteria **142** would correspond to both the triggered event, the receipt of a SMS message, and the at least one criterion **144**, correspondence with a given individual. This would set the preset criteria **142** as correspondence with a certain individual via a SMS message. Preset criteria **142** is used, in a presently preferred embodiment, so that only communications events fitting a predefined profile will results in the retrieval of a communications event history from database **116**. In alternate embodiments of the present inventions, all communications events will result in the retrieval of a communications event history from database **116** using a method, such as the one illustrated in Figure 3. Transceiver **118** is used by mobile device **112** to receive a communications event. Upon receipt of any communications event the preset criteria is compared to the received communications event. If the preset criteria **142** and the received communications event from transceiver **118** match, the process proceeds through the flow to decision **148**, where a determination is made of whether or not the communications event matches the preset criteria. If the communications event matches the preset criteria, mobile device **112** proceeds to step **150** where the selected communications event is added to the unified communications event list in step **156**, which is stored in database **116**. At this point, mobile device **112** marks the communications event as processed in step **152**. If the next communications event did not match the preset criteria in decision **148**, mobile device **112** would have proceeded to mark the communications event as processed **152** without selecting the communications event and adding it to the unified communications event list **156**. Following the marking of the communications event as processed in step **152**, a decision is made as to whether or not all communications

events have been processed in decision **154**. If all outstanding communications events have not been processed, mobile device **112** returns to step **148**. Otherwise, in conjunction with the unified communications event list **156**, which is obtained from database **116**, user interface **124** is provided on display **120**.

[0032] The comparison as illustrated, in Figure 6, to determine whether or not a set of criteria has been matched, will now be illustrated in Figure 7 in greater detail with reference to the embodiment of the table **128** as shown in Figure 5. Figure 7 illustrates database **116** which has contains table **128** having fields for status **130**, type **132**, data **134** and an index **138**. The at least one criteria **144** is predetermined by the user. Upon receipt of an incoming communications event, the at least one criteria is compared to the status **130**, type **132**, data **134**, and index **138** of the incoming communications event. If the event matches the status criteria in **158**, it is then compared to the type criteria in step **160**. If in step **160**, the event matches the type criteria, it is further compared to the data criteria in **162**, and pending successful completion of the event matching the data criteria, the event is matched to the index criteria in step **164**. If in any of the comparisons **158**, **160**, **162** or **164**, the event is not matched to one of the criteria, mobile device **112** proceeds to a does not match state **168**. If all of these comparisons are successful, mobile device **112** proceeds to a match state **166**. Upon reaching a match state **166**, processor **122** queries database **116** to retrieve the communications event history. If does not match state **168** is reached, processor **122** waits for the next communications event. The order as implied by Figure 7 is not a required order, and the comparisons can be carried out in any order or in parallel. The presently illustrated order was selected for simplicity, and is to be considered merely exemplary in nature.

[0033] As described above, a presently preferred embodiment of the present invention cross-links the correspondent identification information with information contained in an address book accessible to mobile device **112**. This allows the address book information to be used to link SMS addresses, telephone numbers for cellular, home and work phones, a plurality of e-mail addresses, and WAP accessible sites associated with a single individual or entity, to each other. This cross-linking of

address based information allows a user to properly put in context all communication with the individual from whom a message has been received.

[0034] In many mobile devices **112**, the ability to integrate with a centralized e-mail server, using such standard protocols as the point of presence (POP) protocol is used to provide a seamless transition between the mobile device **112** and the central e-mail account. In this case, a user of the mobile device **112** is able to reply to e-mail messages from either a desktop computer, or mobile device **112** seamlessly. In a presently preferred embodiment, the mobile device **112** is updated through contact with a central server to reflect that e-mail messages replied to from the desktop have been replied to. Thus, the user of the mobile device **112** will be able to completely determine the context of a received message.

[0035] In an exemplary embodiment, all communications events including messages and calls originating from the mobile device, messages received and sent from a desktop computer, and all other communications events accessible to the mobile device are stored in a database **116**. Database **116** is preferably integrated with the mobile device **112**, though it is fully contemplated that database **116** can reside in a central server and be accessed wirelessly by mobile device **112**. The implementation of such a system will be well understood by those skilled in the art.

[0036] The database **112** preferably tracks the type **132** of communications event, the data **134** contained in the communications event, and preferably a status **130** of the event. The type of the event **132** typically denotes whether it was a telephone call, a SMS message, an e-mail message, a WAP data transmission, or other data based transaction. The type field **132** also indicates whether the communication was received by the user of the mobile device, or originated from the user of the mobile device. The data field **134** typically contains the body of an e-mail message, the body of a SMS message, information related to the WAP data transmission, or call length, as appropriate. The status **130** of the message typically indicates whether a placed or received call was answered, or if a received message was replied to. One skilled in the art will readily appreciate that it is preferable to index this data with an index field **138**, however, the implementation of an index is purely optional, though understood by one skilled in the art. Thus, in operation, a mobile device **112** of the

present invention will receive a communications event and prior to displaying notification of this event, be it an e-mail message, a SMS message, or a telephone call, the processor of the mobile device queries the database **116** using the calling number as a key. The calling number is typically transmitted to the processor of the mobile device using such services as call display, or visual call waiting, which will be well understood to those skilled in the art. The query to the database **116** using the incoming number or address, as a search perimeter will result in a query response containing a list of all communications events between the mobile device **112** or any account associated with mobile device **112**, and the incoming address. This information is then presented to the user on the display **120** of the mobile device so that prior to answering a telephone call the user will know the date of the last communication. Alternatively, if a received SMS message is generating the notification, the user is provided with the context of the SMS message as a result of being able to view prior SMS messages, prior e-mail messages, and is also presented with the dates of the last call initiated to the SMS originating address.

[0037] In a presently preferred embodiment, the communications event history retrieved from database **116** is sorted chronologically, so that the newest information is presented at the top of the list. Additionally, a summary of the number of e-mail messages, SMS messages, WAP sessions, and telephone calls between the mobile device **112** or any account associated with it, and the party originating the message is presented.

[0038] One skilled in the art will readily appreciate that database **116** can be either a relational database, or a flat file database. Although the use of a relational database provides numerous benefits understood by those skilled in art, it is conceivable that an implementation of the present invention can be provided through the use of a flat file database. Additionally, one skilled in the art will readily appreciate that a number of methods of implementing the present invention using a relational database exist. For exemplary purposes, one such method is presented. It should be understood by those skilled in the art, that the presented method is intended to be exemplary, and not limiting of the scope of the present invention.

[0039] In a non-illustrated embodiment, any event, regardless of whether it is a communications event or any other event detectable by the mobile device **112**, can trigger the message software interface module to use a particular pre-set criteria **142** to display select communications events in the communications event history. For example, in a mobile device **112** having an integrated date book, when a conference call scheduled in a datebook occurs, processor **122** triggers the communication software interface module **126** with pre-set criteria **142** to preferably select and represent a pending outgoing conference call communications event with higher priority than other select communications events. Alternatively, when mobile device **112** receives a communication, such as an e-mail message, SMS message, WAP page response, voice/video call, processor **122** triggers the communication software interface module **126** with pre-set criteria **142** to preferably select and represent the received communications event with higher priority than other select communications events.

[0040] The pre-set criteria can also match communications event data. For instance, to view all communications events sent to or received from a particular contact, the pre-set criteria may include matching select communications event data with all of the specific contact information found in an address book entry for the contact. As an example, consider all communications events sent to or received from a stockbroker. Contact information for the stockbroker is preferably kept in the address book. Preferably, each address book entry contains a variety of fields that can be mapped to one or more communications addresses supported by the mobile device. In the entry corresponding to the stockbroker, for example, if the following fields are defined: telephone number, mobile phone number, fax number, email address, and URL's; then an example preferable mapping to message types follows. The phone, mobile, and fax numbers are mapped to voice and/or video communications events. The mobile number is additionally mapped to an SMS address for SMS type communications events. The email address is mapped to email communications events. The URL's are mapped to corresponding communications event types. For instance an http URL can be mapped to web and/or WAP, whereas an FTP URL (File Transfer Protocol) can be mapped to an ftp communications event. All

communications events, including phone calls, SMS communications events, emails, web communications events, WAP communications events or other communications events that match at least one field in the stockbroker contact entry of the address book would then be selected by the communications event software interface module **126**, and would be displayed. Preferably, the presentation of the retrieved data from database **116** would show the contact name, such as "stockbroker" as defined by the preset criteria **142**.

[0041] In another embodiment, the communications event software interface module **126** may identify related stored communications events by comparing the communications event data of each stored communications event **128** with keywords selected by the user. This alternative method of matching the current communications event with select stored communications events **128** may be implemented by itself, or as a means of further limiting the select communications events identified by the other methods described above. To continue the previous stockbroker example, further pre-set criteria can be added to create a further filter that operates on the select communications events, for instance. The communications event data in the new filter may include stock quotes obtained via WAP using an URL as well as notes taken during phone calls with the stockbroker. The user may therefore decide to choose pre-set criteria that, as well as matching contact information, further matches a regular expression, such as for example, the keywords "buy" or "sell". By allowing the user to configure the pre-set criteria, the communications event software interface module **126** unifies communications events based on pre-set criteria which are important to the user at a specific point in time, for instance, allowing the user to unify a stock pick provided by a stockbroker over a phone call or e-mail with a stock quote retrieved subsequently by the user via WAP in order to take a decision to either communicate a buy, sell, or hold directive to his stockbroker or to a trading system.

[0042] Thus far the system of the present invention has been described as integrated in mobile device **112**, it will be understood by one skilled in the art that a software implementation of the present invention can be executed on a number of different platforms, or packaged for use on different platforms. In one such example, a desktop computer can be configured to use the communications event handler of the

present invention to provide a communications event history for received email messages. Additionally, the desktop computer may be attached to an SMS modem so that it is capable of receiving SMS messages and can then provide a communications event history to a user to permit the user to determine the context of a received SMS message. Additionally, the desktop computer can be configured so that it is in communication with a Voice-over-Internet-Protocol (VoIP) telephone, so that all incoming and outgoing calls are recorded to the communications event database **116**. In such an implementation, the communications event handler would use a communications event database interface to communicate with either a local or remote communications event database **116** to retrieve the communications event histories associated with correspondents identified using either call display information, or addressing information extracted from the header of an incoming e-mail or SMS message.

[0043] The above-described embodiments of the present invention are intended to be examples only. Alterations, modifications and variations may be effected to the particular embodiments by those of skill in the art without departing from the scope of the invention, which is defined solely by the claims appended hereto.

What is claimed is:

1. A method of processing a communications event in a mobile device having a user interface, the method comprising:

identifying a correspondent associated with the communications event;

retrieving, from a communications event database, a communications event history associated with the identified correspondent, the communications event history including a plurality of prior communications events with the identified correspondent, the prior communications events including a plurality of event types; and

displaying the retrieved communications event history of the identified correspondent using the user interface of the mobile device.

2. The method of claim 1, wherein the step of identifying is preceded by the step of determining a communications event type for the communications event.

3. The method of claim 2, wherein the determined communications event type of the communications event is selected from a list including telephony based voice communications events, e-mail communications events, short messaging service communications event and wireless applications protocol communications event.

4. The method of claim 1, wherein the communications event is an incoming communications event, and further including the step of receiving the incoming communications event prior to identifying the correspondent.

5. The method of claim 1, wherein the plurality of event types include at least two of a telephony based voice communications event type, an e-mail communication event type, a short messaging service communications event type and a wireless applications protocol communications event type.

6. The method of claim 4, further including the step of adding the incoming communications event to the communications event history in the communications event database.

7. The method of claim 4, wherein the step of receiving an incoming communications event includes one of:

receiving a telephony based phone call;

receiving an incoming email message; and

receiving an incoming short messaging service (SMS) message.

8. The method of claim 1, wherein the step of identifying the correspondent includes one of:

extracting a phone number from call display information;

extracting an email address from the header of an email message; and

extracting an originating address from a SMS message.

9. The method of claim 8, wherein the step of identifying further includes cross referencing one of the extracted phone number, the extracted email address and the extracted originating address, with entries in an address book accessible to the mobile device.

10. The method of claim 7, further including a step of controlling the user interface to provide the user with communications event handling options.

11. The method of claim 10, wherein the step of controlling the user interface includes providing the user an option to either ignore or answer an incoming telephony based call.

12. The method of claim 11, further including the step of updating the communications event database to reflect a status of the incoming call.

13. The method of claim 10, wherein the step of displaying communications event handling options includes displaying the option to either read or ignore one of the incoming email message and the incoming SMS message.

14. The method of claim 13, further including the step of updating the communications event database to reflect the status of one of the incoming email message and the incoming SMS message.

15. A mobile device, comprising:

a transceiver for transmitting and receiving communications events;

a communications event database for storing a plurality of communications event histories, each of the plurality of communications event histories being associated with one of a plurality of correspondents;

a communications event handler for identifying a correspondent in response to a communications event and for retrieving the associated communications event history for the identified correspondent; and

a user interface for displaying the communications event history of the identified correspondent.

16. The mobile device of claim 15, wherein the communications event handler includes a communications event type identifier for identifying the type of the communications event from a list including telephony based voice communications events, e-mail communications events, short messaging service communications event and wireless applications protocol communications event.

17. The mobile device of claim 15, wherein the user interface is a display, and the communications event handler includes a display controller for controlling the display to display the retrieved communications event history.

18. The mobile device of claim 15, wherein the communications event handler includes a correspondent identifier for identifying the correspondent of an incoming communications event.

19. The mobile device of claim 18, wherein the correspondent identifier is connected to the transceiver for receiving call display information, and includes means for identifying the correspondent of an incoming communications event based on the received call display information.

20. The mobile device of claim 19, wherein the correspondent identifier includes an address book interface for cross-referencing the received call display information with entries in an address book accessible to the mobile device to identify the correspondent.

21. The mobile device of claim 18, wherein the correspondent identifier includes header parsing means for parsing the header of one of a received email message and a received SMS message to extract an originating address, and includes means for identifying the correspondent of an incoming communications event based on the extracted originating address.

22. The mobile device of claim 21, wherein the correspondent identifier includes an address book interface for cross referencing the extracted originating address with entries in an address book accessible to the mobile device to identify the correspondent.

23. The mobile device of claim 15, wherein the communications event handler includes a user interface controller for controlling the user interface to provide a user with communications event handling options.

24. The mobile device of claim 23, wherein the communications event handler includes means for updating the communications event database to reflect the status of an incoming call.

ABSTRACT

A user interface and method for viewing communications events on a mobile device includes a user interface, a communications event handler, and a communications event database is disclosed herein. The communications event handler interfaces with the database and the user interface to the provide a user of the mobile device with a communications event history associated with the correspondent of an incoming communications event. Additionally the communications event handler interfaces with the database and the user interface to the provide a user of the mobile device with a communications event history for a specified correspondent.

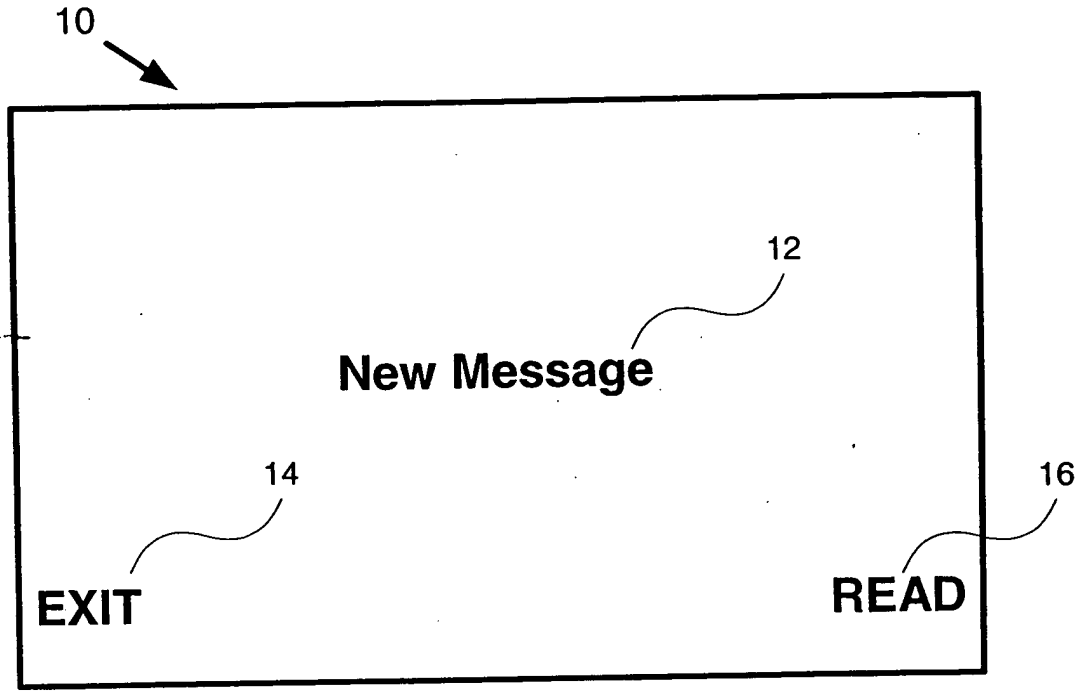


Figure 1 (Prior Art)

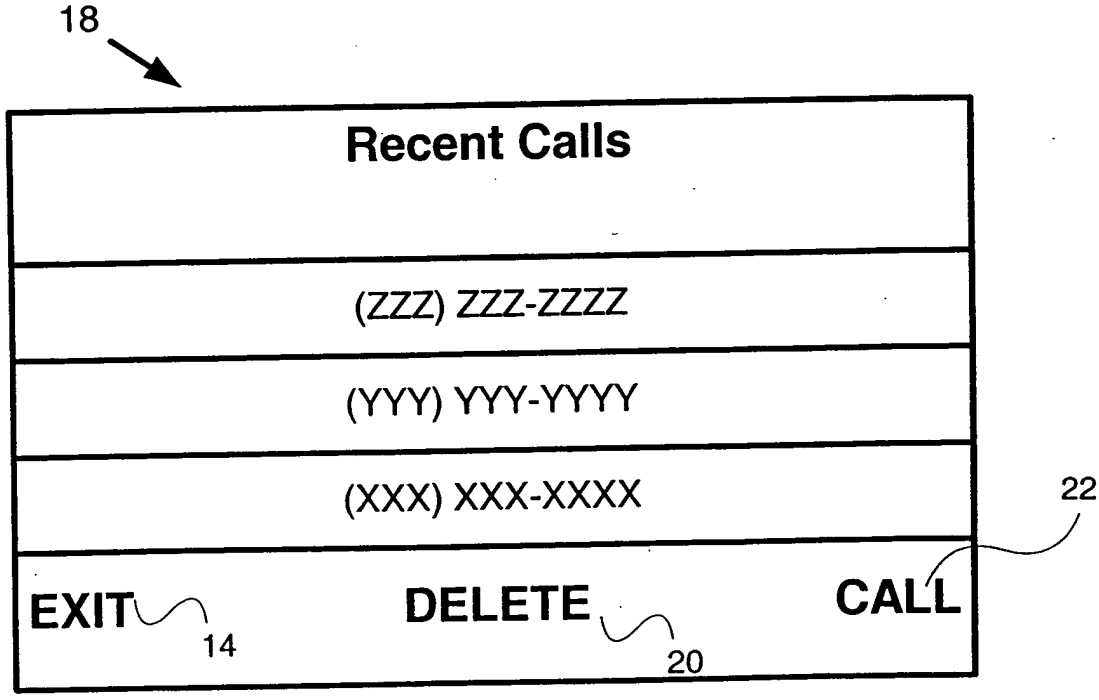


Figure 2 (Prior Art)

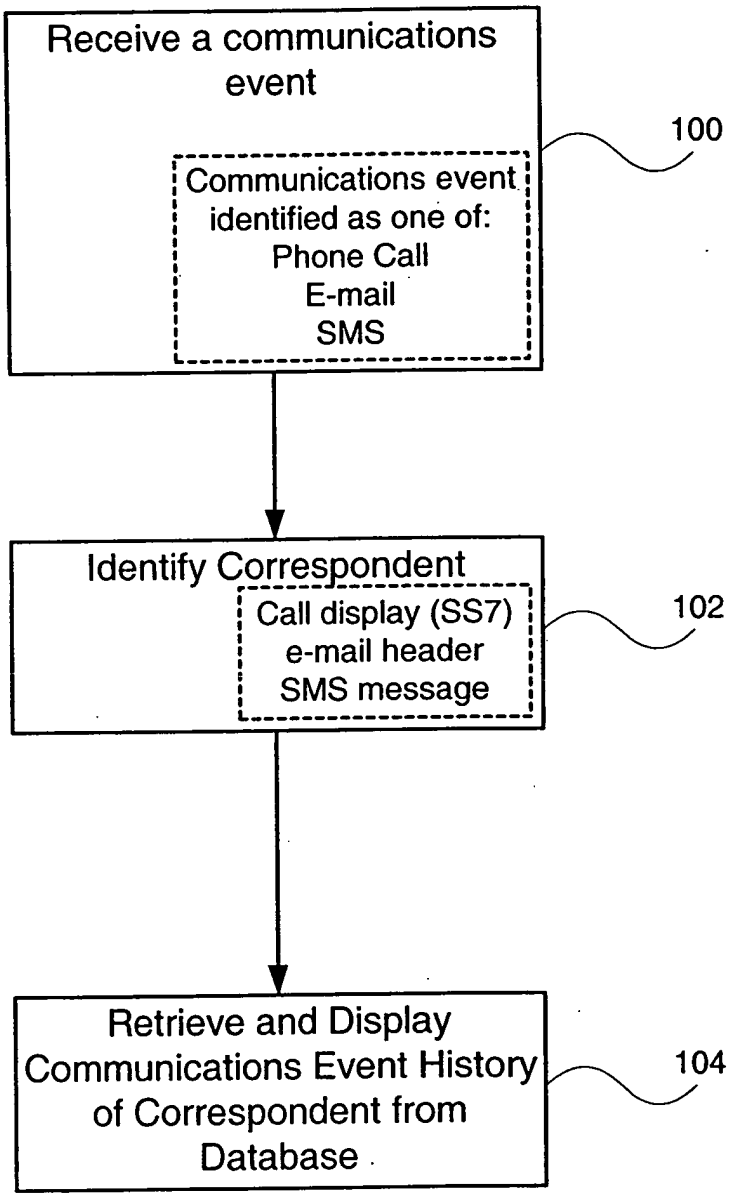

Receive a communications event
Communications event identified as one of:
Phone Call
E-mail
SMS
100
Identify Correspondent
Call display (SS7)
e-mail header
SMS message
102
Retrieve and Display Communications Event History of Correspondent from Database
104

Figure 3

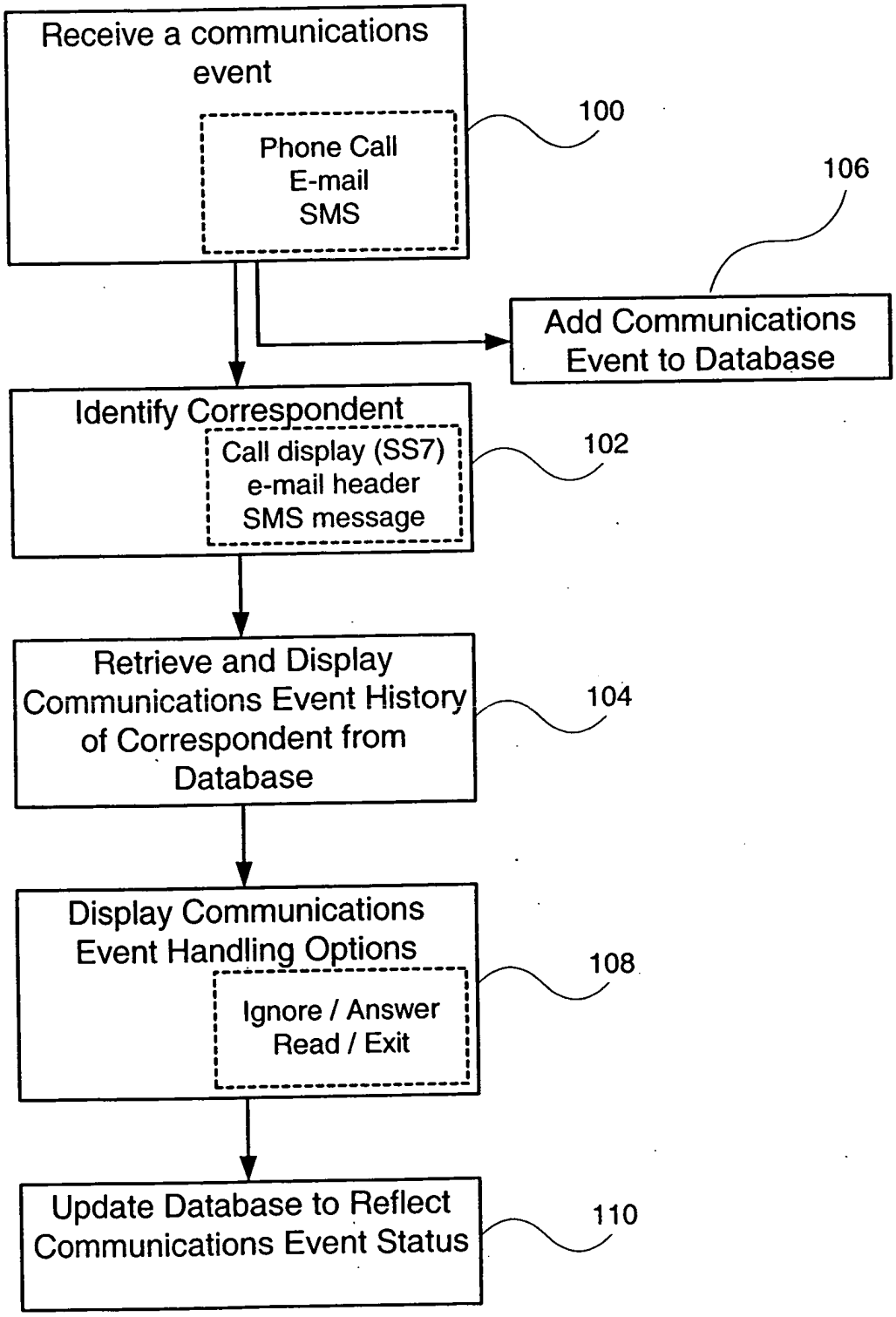

Receive a communications event
Phone Call
E-mail
SMS
100
106
Add Communications Event to Database
Identify Correspondent
Call display (SS7)
e-mail header
SMS message
102
Retrieve and Display Communications Event History of Correspondent from Database
104
Display Communications Event Handling Options
Ignore / Answer
Read / Exit
108
Update Database to Reflect Communications Event Status
110

Figure 4

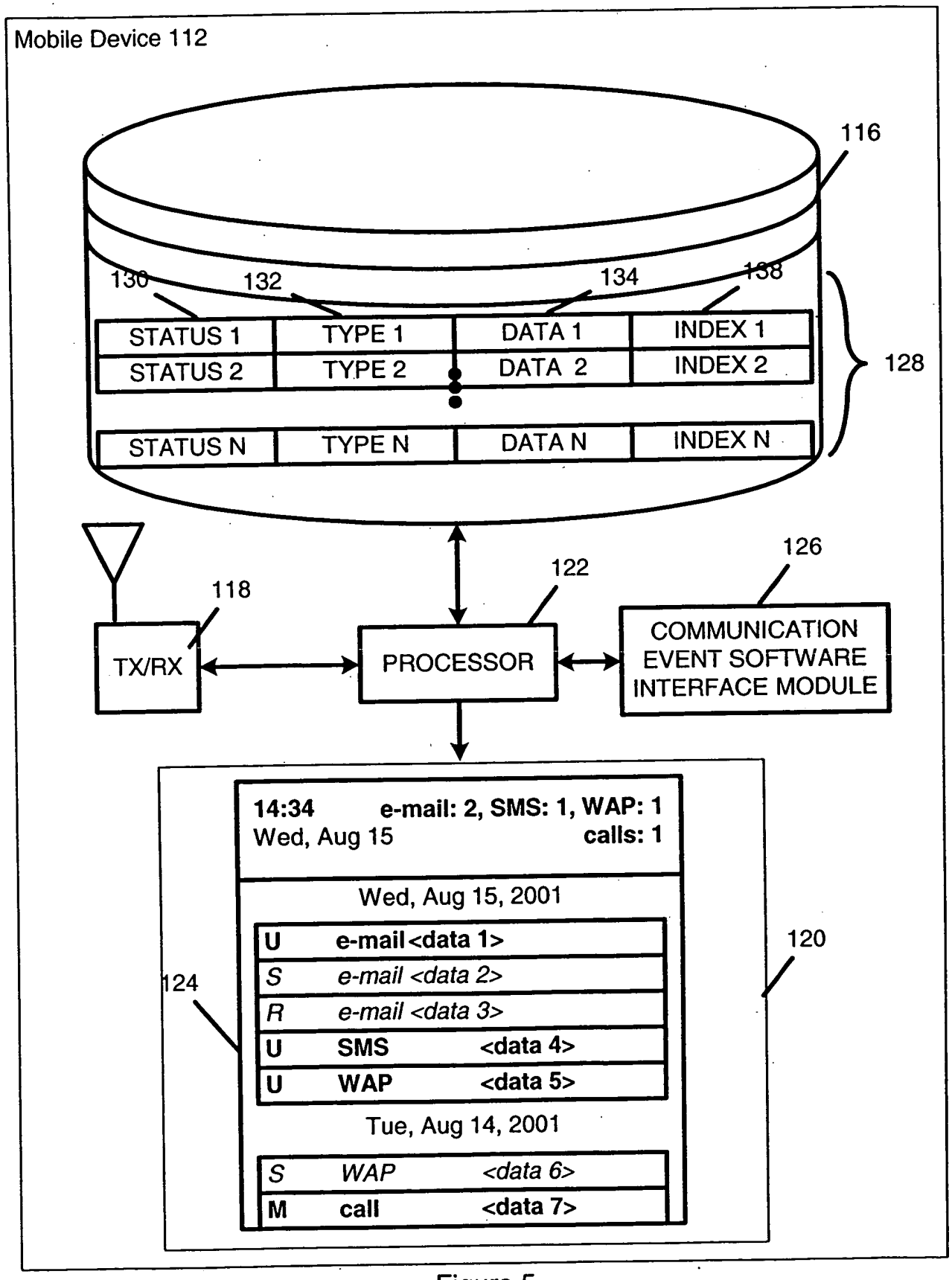

Mobile Device 112
116
130
132
134
138
STATUS 1
TYPE 1
DATA 1
INDEX 1
STATUS 2
TYPE 2
DATA 2
INDEX 2
STATUS N
TYPE N
DATA N
INDEX N
128
118
122
126
TX/RX
PROCESSOR
COMMUNICATION EVENT SOFTWARE INTERFACE MODULE
14:34
Wed, Aug 15
e-mail: 2, SMS: 1, WAP: 1
calls: 1
Wed, Aug 15, 2001
U e-mail <data 1>
S e-mail <data 2>
R e-mail <data 3>
U SMS <data 4>
U WAP <data 5>
Tue, Aug 14, 2001
S WAP <data 6>
M call <data 7>
120
124

Figure 5

Figure 6

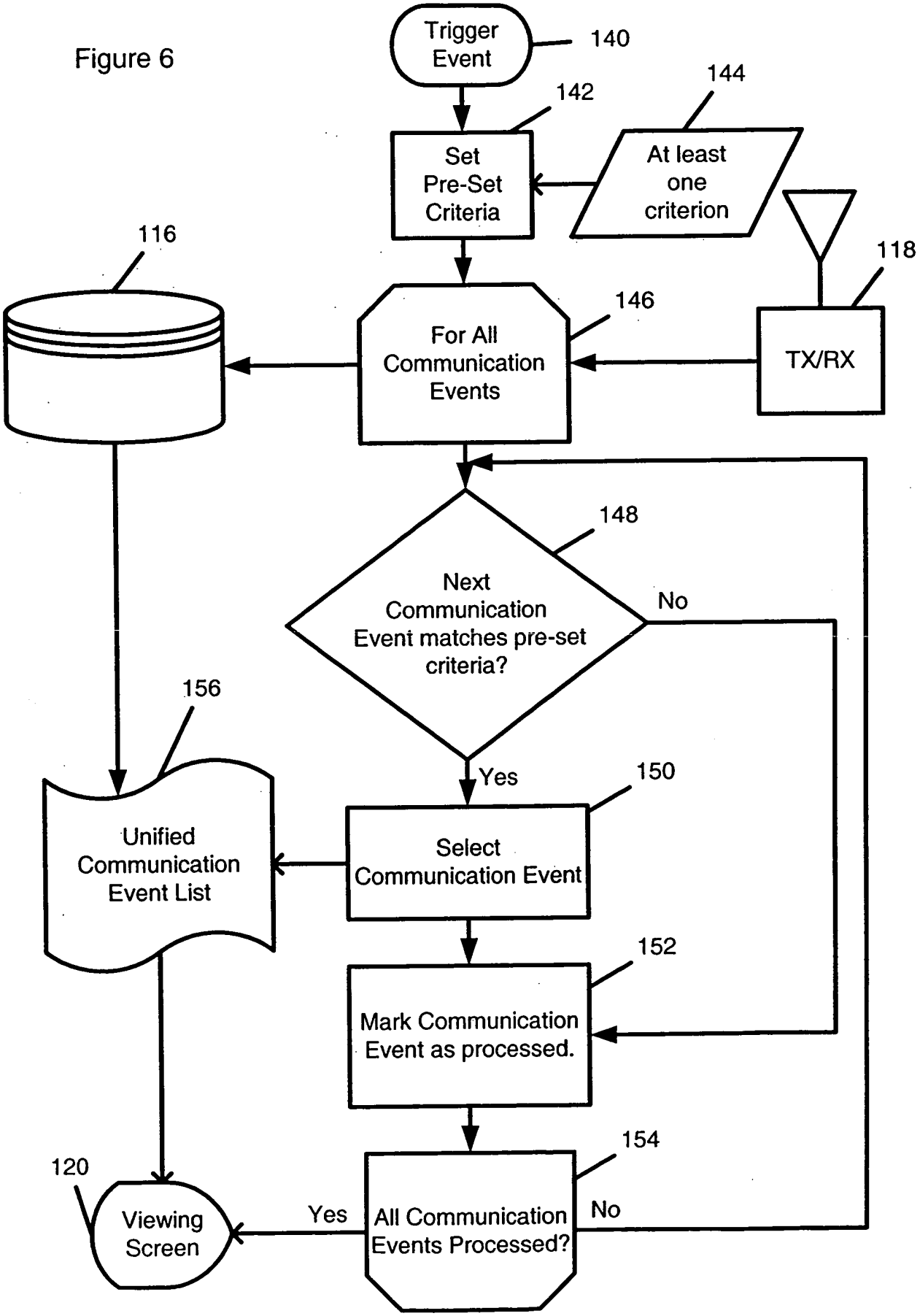
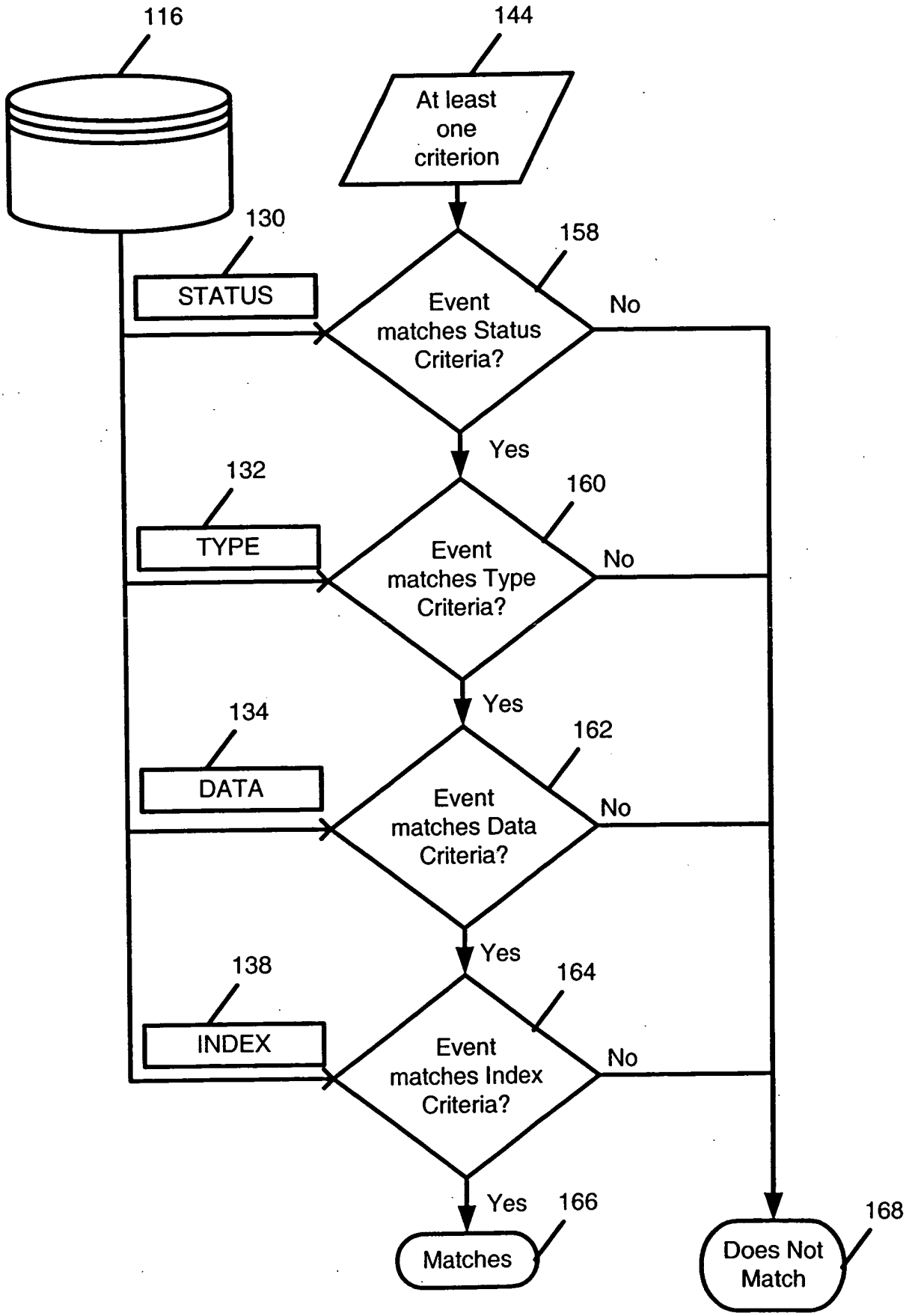

Trigger Event
140
142
144
Set Pre-Set Criteria
At least one criterion
116
118
146
For All Communication Events
TX/RX
148
Next Communication Event matches pre-set criteria?
No
156
Yes
150
Unified Communication Event List
Select Communication Event
152
Mark Communication Event as processed.
154
120
Viewing Screen
Yes
All Communication Events Processed?
No

Figure 7


116
144
At least one criterion
130
158
STATUS
Event matches Status Criteria?
No
Yes
132
160
TYPE
Event matches Type Criteria?
No
Yes
134
162
DATA
Event matches Data Criteria?
No
Yes
138
164
INDEX
Event matches Index Criteria?
No
Yes
166
Matches
168
Does Not Match